

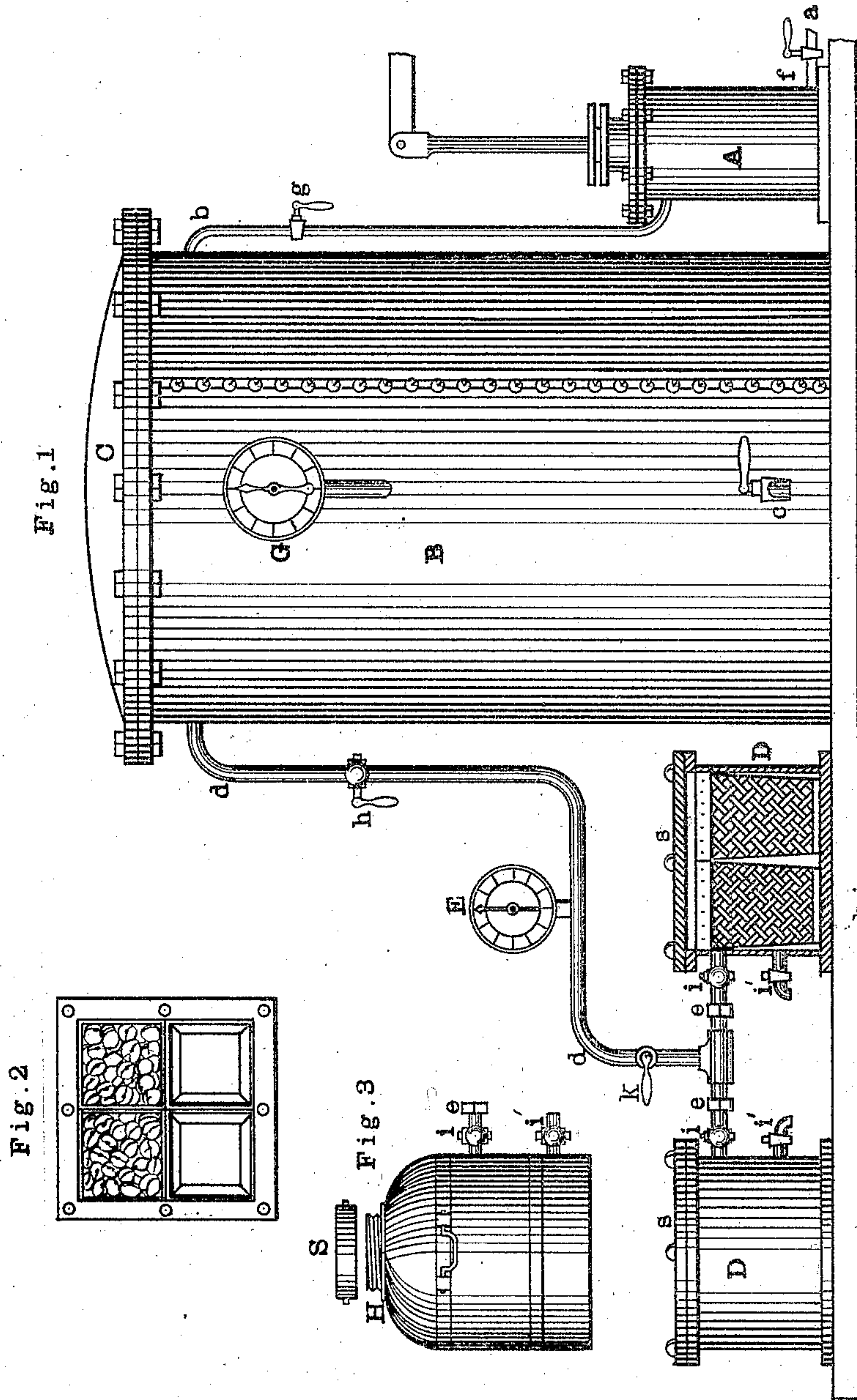
(No Model.)

L. McMURRAY.

APPARATUS FOR PRESERVING BY GAS..

No. 334,966.

Patented Jan. 26, 1886.



WITNESSES:

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LOUIS McMURRAY, OF BALTIMORE, MARYLAND, ASSIGNOR OF THREE-
FOURTHS TO EDGAR MALIN, ARTHUR W. LAWTON, AND LOUIS S.
HOUGHTON, ALL OF SAME PLACE.

APPARATUS FOR PRESERVING BY GAS.

SPECIFICATION forming part of Letters Patent No. 334,966, dated January 26, 1886.

Application filed June 20, 1884. Serial No. 135,474. (No model.)

To all whom it may concern:

Be it known that I, LOUIS McMURRAY, of the city of Baltimore, and State of Maryland, have invented a new and Improved Apparatus for Keeping and Preserving Fruits and Vegetables, of which the following is a specification.

My invention relates, especially, to such articles of food, in their crude state—such as strawberries, peaches, &c.—as they come to market from the tree or vine.

The following is a full description of an apparatus and process for effecting the purpose illustrated by the accompanying drawings, of which—

Figure 1 is an upright view of the apparatus, showing the pump, portable vessels, and intermediate tank, with pressure-gages and connecting pipes. Fig. 2 is a top view of a square vessel designed to hold fruit. Fig. 3 is a view of a specially-constructed can or vessel for convenience in preparing food articles for transportation.

In the drawings, A represents a pump, connected by the pipe *a* to a tank or other receptacle containing a purifying gas. This gas may be made in any way suitable for the purpose.

B is a large tank or receptacle provided with the cover C, by which it may be closed tightly. The tank B communicates with the pump A by means of the pipe *b*. This tank is also provided with the pressure-gage G, by means of which the pressure of gas in the tank is ascertained. At or near the bottom of the tank I have placed the cock *e*, to allow the air to escape as the gas is forced into the tank.

D D are portable vessels, made of metal, and provided with the covers S S, to close and seal them hermetically. These receiving-vessels I design to make of suitable size to hold from one to four baskets of peaches of the ordinary market size.

d is a pipe connecting the small portable casks with the large tank B. Upon any portion of this pipe *d*, I place the pressure-gage E, and connect the portable tanks with the pipe *d* by means of the coupling *c*, so as to connect or disconnect the portable vessels D D from the

pipe *d* at pleasure. The portable casks are each provided with the cock *i*, to open or close communication with the tank B and gas-supply, and also with the cocks *i'*, to allow the air to escape as the gas under pressure enters the vessels D. I have also provided the apparatus with the cock *f* in the pipe *a* to open or close off the supply of gas from the main receptacle to which the pipe leads, (but not shown in the drawings,) the cock *g* in the pipe *b* leading from the pump to the tank B, to open or shut off communication between the pump and the tank B, the cock *h* in the pipe *d* to close communication between the tank B and the portable vessels D, and also the cock *k* in the same pipe *d*, which may be dispensed with, if desired, but is used to save any waste of gas between the cock *h* and the end of the pipe *d*, when the small casks are disconnected.

A can of special construction is shown in Fig. 3, which I desire to make a part of my invention. This can I construct of heavy tin or light iron, galvanized, if preferred. At the top of the can I have provided a collar, H, upon which a screw is cut, to receive the cover S, which contains a corresponding female screw. This cover is secured upon the collar, at the bottom of which and surrounding the collar I place an ordinary india-rubber gasket, or make a joint with lead in the ordinary way. To this can I attach the cocks *i* and *i'*, as in the others, and provide the connecting-pipe with the coupling *c*, to connect and disconnect the can from the pipe. In a can constructed in this way the fruit or other article of food may be put through the opening at the top and closed for transportation by the screw-cover.

The operation of the device is as follows: The tank B is tightly closed by the cover C. Mixed nitrogen and carbonic-oxide gases, or any other preserving-gas for preserving purposes, prepared and purified in any suitable way, is allowed to enter a receiver. (Not shown in the drawings.) The pump A is then connected thereto by means of the pipe *a*. I then open the cock *g* in the pipe *b*, leading from the pump to the tank B, and the cock *e* in the tank B, to allow the air to escape, and

close the cock *h* in the pipe *d*. The cock *f* in the pipe *a* is then opened, and the operator works the pump by the handle or by any suitable power applied thereto. The gases thus drawn through the pump are forced into the cylinder or tank B until the air is expelled, when the cock *c* in the tank B is closed. The operation of the pump is then continued until the pressure of gas in the tank is indicated by the pressure-gage to be at the point required. I desire that this pressure should be higher than is necessary, in order that the gases drawn therefrom to the portable tanks may be regulated at any suitable pressure below that in the tank B. Thus it will be seen that the pressure of the gases in the tank B may be raised as high as fifty or sixty pounds per square inch, if desired. The cock *g* in the pipe *b* is then closed, leaving the tank B filled with a preserving-gas under high pressure. I then prepare my portable tanks by placing the fruit or vegetables within them and closing them tightly with their covers S S. They are then connected to the pipe *d* by means of the coupling *e*. The cocks *i* and *i'* are then opened and the fruit or vegetables are ready to receive the gas. I now open the cock or cocks in the pipe *d*, allowing the gas to enter the portable tanks D until the air has escaped, when the cocks *i'* are closed, the gas continues to enter under pressure from the tank B, and by watching the pressure-gage E, I ascertain when the pressure of gas within the portable vessels has attained the desired height. At this point all the cocks between the portable tanks D and the tank B are closed, the tanks disconnected by loosening the coupling *e*, and the portable vessels retain the fruit or vegetable surrounded by the preserving-gas at high pressure, and are ready for transportation.

It will be seen that the food articles may be supplied with the preserving-gas direct from the pump to the portable tanks D D without the intermediate tank, B. We prefer, however, to use this tank for the reason that the gases entering the portable tanks from the tank B would probably flow more steadily, and it also affords means for filling the tank B with a supply of gas under pressure, and having it ready when the portable tanks are ready to receive it. It will also be seen that the tank B may be used as a preserving-tank for keeping articles of food by taking off the cover and filling the tank with the food article to be preserved, then closing the same. Thus the tank may be filled with the gas and surround the article of food therein under high pressure, induced therein by the pump and kept there until required for sale.

I am not able to state at present the exact pressure required for each and all classes of

fruits or vegetables. This pressure will probably vary with the article to be kept and with the condition of the article of food when placed within the tanks, and would probably be between five and thirty pounds per square inch. I am, however, prepared to state that in my experiments upon strawberries I have found a pressure of gas from ten to fifteen pounds to act perfectly, and the goods so prepared and kept have come out dry without apparent moisture and in good salable condition.

I am aware that it is not new to preserve vegetable and animal substances for food when desiccated by expelling the air from the vessels in which they are inclosed, by allowing gas to enter which will not support combustion, and substituting this gas in place of the air thus expelled; but this is not my invention.

I am also aware that articles of food have been placed within closed vessels in bulk and a preserving-gas allowed to surround said articles under such pressure as may be obtained from the gasometer; but this pressure I believe to be insufficient for the purpose. There must be a greater pressure than can be obtained in this way, in order that the gas may not only expel all the air in the cylinder, but may also surround the food in close contact therewith under a considerable pressure to maintain and hold the gases in close and permanent contact with the article of food to be kept, and hence the necessity of providing a pump or other equivalent method of inducing and maintaining a higher pressure thereon.

While the process as well as the apparatus is a distinctive part of my invention, I shall confine my claims in this patent to the apparatus, and make the process the subject of a separate application.

What I claim is—

1. In an apparatus for keeping and preserving fruits and vegetables, the pump A, and preserving-vessel D, in combination with the intermediate gas-receiving tank, B, the said tank provided with the cock *c*, and pressure-gage, as described and set forth.

2. In an apparatus for keeping and preserving fruits and vegetables, the combination of the force-pump A, the intermediate gas-receiving tank, B, and pipe *d*, provided with the coupling *e*, and pressure-gage E, arranged and operating as set forth.

3. In an apparatus for keeping and preserving fruits and vegetables, the combination of the pump A, intermediate tank, B, having the cock *c*, connecting-pipes *b* and *d*, and cocks *g* and *h*, substantially as set forth.

LOUIS McMURRAY.

Witnesses:

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GEO. SAVAGE.